

**PATENT COOPERATION TREATY  
PCT**

**INTERNATIONAL PRELIMINARY REPORT ON PATENTABILITY**

(Chapter II of the Patent Cooperation Treaty)

(PCT Article 36 and Rule 70)

REC'D 22 FEB 2006

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Applicant's or agent's file reference PT/0876(2)/UTM/PCT/03/kl	<b>FOR FURTHER ACTION</b> See Form PCT/IPEA/416	
International application No. PCT/SG2004/000358	International filing date (day/month/year) 1 November 2004	Priority date (day/month/year) 10 November 2003
International Patent Classification (IPC) or national classification and IPC  Int. Cl. <i>C01B 33/12</i> (2006.01), <i>C01B 33/158</i> (2006.01), <i>C01B 33/18</i> (2006.01)		
Applicant  UNIVERSITI TEKNOLOGI MALAYSIA et al.		

1. This report is the international preliminary examination report, established by this International Preliminary Examining Authority under Article 35 and transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

3. This report is also accompanied by ANNEXES, comprising:

a. ☐ (sent to the applicant and to the International Bureau) a total of sheets, as follows:


☐ sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications authorized by this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions).

☐ sheets which supersede earlier sheets, but which this Authority considers contain an amendment that goes beyond the disclosure in the international application as filed, as indicated in item 4 of Box No. I and the Supplemental Box.

b. ☐ (sent to the International Bureau only) a total of (indicate type and number of electronic carrier(s)) , containing a sequence listing and/or table related thereto, in electronic form only, as indicated in the Supplemental Box Relating to Sequence Listing (see Section 802 of the Administrative Instructions).

4. This report contains indications relating to the following items:

<input checked="" type="checkbox"/> Box No. I	Basis of the report
<input type="checkbox"/> Box No. II	Priority
<input type="checkbox"/> Box No. III	Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
<input type="checkbox"/> Box No. IV	Lack of unity of invention
<input checked="" type="checkbox"/> Box No. V	Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
<input type="checkbox"/> Box No. VI	Certain documents cited
<input type="checkbox"/> Box No. VII	Certain defects in the international application
<input type="checkbox"/> Box No. VIII	Certain observations on the international application

Date of submission of the demand 10 June 2005	Date of completion of this report 07 February 2006
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustalia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer  <b>ALBERT S. J. YONG</b> Telephone No. (02) 6283 2160 

**Box No. I Basis of the report**

## 1. With regard to the language, this report is based on:

☒ The international application in the language in which it was filed☐ A translation of the international application into \_\_\_\_\_, which is the language of a translation furnished for the purposes of:☐ international search (under Rules 12.3(a) and 23.1 (b))☐ publication of the international application (under Rule 12.4(a))☐ international preliminary examination (Rules 55.2(a) and/or 55.3(a))2. With regard to the elements of the international application, this report is based on (*replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report*):☒ the international application as originally filed/furnished☐ the description:

pages as originally filed/furnished

pages\* received by this Authority on \_\_\_\_\_ with the letter of

pages\* received by this Authority on \_\_\_\_\_ with the letter of

☐ the claims:

pages as originally filed/furnished

pages\* as amended (together with any statement) under Article 19

pages\* received by this Authority on \_\_\_\_\_ with the letter of

pages\* received by this Authority on \_\_\_\_\_ with the letter of

☐ the drawings:

pages as originally filed/furnished

pages\* received by this Authority on \_\_\_\_\_ with the letter of

pages\* received by this Authority on \_\_\_\_\_ with the letter of

☐ a sequence listing and/or any related table(s) - see Supplemental Box Relating to Sequence Listing.3. ☐ The amendments have resulted in the cancellation of:☐ the description, pages☐ the claims, Nos.☐ the drawings, sheets/figs☐ the sequence listing (*specify*):☐ any table(s) related to the sequence listing (*specify*):4. ☐ This report has been established as if (some of) the amendments annexed to this report and listed below had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).☐ the description, pages☐ the claims, Nos.☐ the drawings, sheets/figs☐ the sequence listing (*specify*):☐ any table(s) related to the sequence listing (*specify*):

\* If item 4 applies, some or all of those sheets may be marked "superseded."

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**Box No. V** Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

## 1. Statement

Novelty (N)	Claims 1-13	YES
	Claims	NO
Inventive step (IS)	Claims 1-13	YES
	Claims	NO
Industrial applicability (IA)	Claims 1-13	YES
	Claims	NO

## 2. Citations and explanations (Rule 70.7)

**NOVELTY**Claims 1-13

The invention is directed to making a silica aerogel by combusting rice husk to form rice husk ash, treating with sodium hydroxide, heating and stirring to form a sodium silicate solution, adding concentrated sulphuric acid to the resulting water glass solution to convert the sodium silicate to silica and produce a hydrogel, ageing said hydrogel, displacing water with an alcohol to form an alcogel and finally making the aerogel by supercritical drying with carbon dioxide.

The closest citation is D1: Derwent abstract accession no. 2004-063165/07 of CN 1449997.

However, the citation derives the silica aerogel from a different method, comprising the addition of 0.1-2N of acid to neutralise the alkaline solution to produce a hydrosol, followed by ageing, then substituting the water content in the hydrosol with organic solvent, followed by substituting organic solvent with liquid CO<sub>2</sub> and then supercritical drying of CO<sub>2</sub> before a silicon aerogel is achieved. Therefore, the claims are novel.

**INVENTIVE STEP**Claims 1-13

The addition of acid in D1 is for neutralisation of the alkaline solution. D1 does not fairly suggest addition of concentrated sulphuric acid to convert sodium silicate to silica and produce a hydrogel. Therefore, claims 1-13 involve an inventive step.

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